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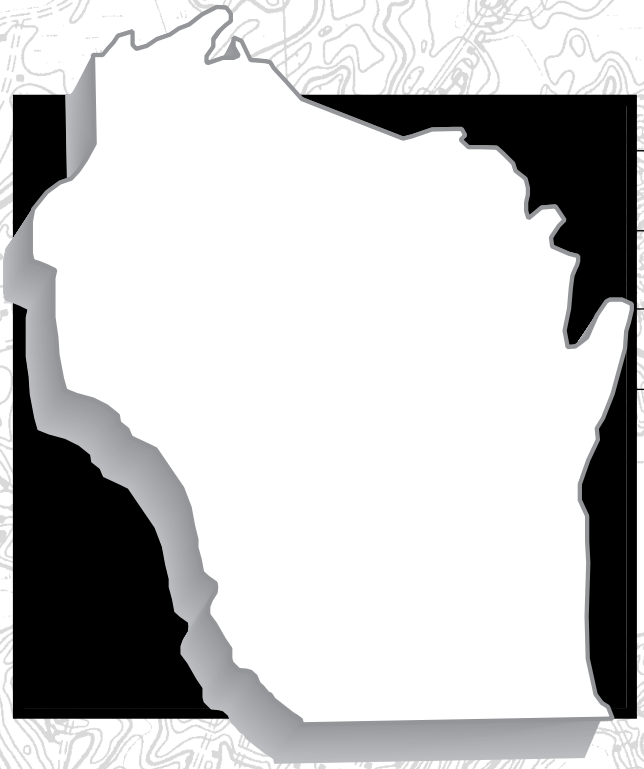
Wisconsin State Primer



A Primer on Developing Wisconsin's Landfill Gas-to-Energy Potential

LANDFILL METHANE OUTREACH PROGRAM

Wisconsin Department of Natural Resources

WISCONSIN ENERGY BUREAU
Department of Administration

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The EPA Landfill Methane Outreach Program

The recovery of energy from landfill gas provides local and global environmental and energy benefits, as well as economic benefits. The methane captured from landfills can be transformed into a cost-effective fuel source for generating electricity and heat, firing boilers, or even powering vehicles.

To promote the use of landfill gas as an energy resource, the U.S. Environmental Protection Agency (EPA) has established the Landfill Methane Outreach Program (LMOP). The goals of LMOP are to reduce methane emissions from landfills by:

- Encouraging environmentally and economically beneficial LFGTE development
- Removing barriers to developing LFGTE projects

To achieve these goals, EPA establishes alliances with four key constituencies:

- State environmental and energy agencies
- Energy users/providers (including investor-owner, municipal and other public power utilities, cooperatives, direct end users, and power marketers)
- Industry (including developers, engineers, and equipment vendors)
- Community partners (municipal and small private landfill owners and operators; cities, counties, and other local governments; and community groups)

EPA establishes these alliances through a Memorandum of Understanding (MOU). By signing the MOU, each ally acknowledges a shared commitment to promoting landfill gas energy recovery at solid waste landfills, recognizes that the widespread use of landfill gas as an energy resource will reduce methane and other air emissions, and commits to certain activities that enhance the development of this resource.

As of January 1999, over 240 landfill methane recovery projects were operating in the United States. EPA estimates that up to 750 landfills could install economically viable landfill energy projects by the year 2000.

Landfill Gas-to-Energy Projects in Wisconsin

Wisconsin is a member of the LMOP State Ally Program, which encourages cooperation between EPA and state energy and environmental agencies to promote the development of LFGTE resources. As a State Ally, the Wisconsin Department of Natural Resources and Wisconsin Energy Bureau focus on developing consensus among landfill operators, utility companies, independent power producers, project developers, utility regulators, and the state's regulators so they can work together to promote new energy and environmental opportunities from which all Wisconsin residents will benefit.

Eight LFGTE projects are currently operating in Wisconsin and three more are planned. According to EPA and the State of Wisconsin, an additional seven landfills have the potential to support economically viable landfill gas-to-energy projects. The following table describes Wisconsin's seven candidate landfills.

Table A Candidate Landfills for Landfill Gas-to-Energy Projects in Wisconsin

Landfill Name	County	Operational Status	Status of LFGTE Project
Brown County East LF	Brown	Open	Planned
Brown County West LF	Brown	Closed	Potential
Hechimovich SLF	Dodge	Open	Planned
Ridgeview Recycling LF	Manitowoc	Open	Planned
Rock County City of Janesville LF	Rock	Open	Planned
Troy Area LF Incorporated	Walworth	Open	Unknown
La Crosse County LF	x	Closed	Potential
Mallard Ridge Northern	x	Open	Planned
Mallard Ridge Recycle LF	x	Closed	Planned
Oneida	x	Open	Potential
Tork LF/Seneda LF	x	Open	Potential
Valley Sanitation	x	Open	None

Source: EPA's Opportunities for Landfill Gas Energy Recovery in Wisconsin: Draft Profiles of Candidate Landfills and Current Projects and information provided by the State of Wisconsin.

2 Electricity Restructuring and LFGTE

What Is Electricity Restructuring?

Electricity restructuring refers to the introduction of competition into both the wholesale and retail electricity markets. Until now, electric utilities operated under monopolies authorized by federal and state regulatory authorities as the sole provider of electric service to consumers within a specific service territory. Under restructuring, utilities will lose these monopolies, enabling other energy providers to compete for their customers. The result will be more energy options for consumers, lower energy prices, and greater use of renewable energy sources.

Efforts to restructure the electric utility industry began in 1978 with passage of the Public Utilities Regulatory Policies Act (PURPA), which required utilities to buy a portion of their power from unregulated power generators in an effort to encourage the development of smaller generating facilities, new technologies, and renewable fuel sources. The National Energy Policy Act of 1992 (EPACT) expanded on PURPA, allowing more types of unregulated companies to generate and sell electricity, effectively creating a competitive wholesale market for electric power.

Restructuring at the retail level has been a hot issue in many states since the passage of EPACT, which delegated to states the authority to introduce competition among electric utilities within their borders. Fourteen states as of January 1999 have since enacted some form of restructuring legislation, while the remaining 36 are considering such legislation.

How Do These Changes Affect Landfill Gas Recovery?

Many states are including renewable energy provisions in their restructuring legislation. Such provisions mandate utilities to include a certain percentage of electricity generated from renewable, or "green energy," sources into their energy mixes. LFGTE is one such green energy source.

In March 1998, the Clinton Administration unveiled its "Comprehensive Electricity Competition Plan" to restructure the electricity industry nationwide. Contained in this proposal is a Renewable Portfolio Standard (RPS) that would guarantee that a minimum percentage of the nation's electricity be powered by green energy. Energy service providers would be required to cover a percentage of their electricity sales with generation from non-hydroelectric renewable sources such as wind, solar, geothermal, and biomass (which includes LFGTE).

Marketing Landfill Gas Recovery as Green Power

One of the emerging areas and most promising mechanisms to encourage utilities and other energy marketers to participate in LFGTE projects is the development of green marketing programs. Green marketing programs are designed to enable energy marketers to position renewable energy products (including LFGTE) as premium products, and therefore, collect a premium price from their customers. In addition, green marketing allows energy marketers in competitive marketplaces to differentiate their energy product, and allows utilities in non-restructured marketplaces to gain critical product marketing experience in preparation for competition. However, the general public is less familiar with LFGTE than other sources of renewable energy; therefore, support from the LMOP is often critical to ensure the success of early LFGTE green marketing efforts.

Get the Latest Information on Electricity Restructuring in Your State

For up-to-date information on electricity restructuring in Wisconsin, visit the National Conference of State Legislatures Web site at: http://www.ncsl.org/programs/esnr/restru.htm. This site contains a glossary of terms related to electricity restructuring as well as direct links to full text of restructuring legislation on a state-by-state basis.

3 The Goals of This Primer

Permits, incentive programs, and policies for LFGTE project development vary greatly from state to state. To guide LFGTE project developers through the state permitting process and to help them to take advantage of state incentive programs, the LMOP has worked with state agencies to develop individual primers for states participating in the State Ally Program. By presenting the latest information on federal and state regulations and incentives affecting LFGTE projects in this primer. The LMOP and Wisconsin state officials hope to facilitate development of many of the landfills listed in Table A.

To develop this primer, the State of Wisconsin identified all the permits and incentive programs that could apply to LFGTE projects developed in Wisconsin. It should be noted, however, that the regulations, agencies, and policies described are subject to change. Changes are likely to occur whenever a state legislature meets, or when the federal government imposes new directions on state and local governments. LFGTE project developers should verify and monitor the status of laws and rules that might affect their plans or the operations of their projects.

Who Should Read This Primer?

Throughout the country, the number of landfill gas-to-energy (LFGTE) projects is growing. Recovering methane gas at solid waste landfills provides significant environmental and economic benefits by eliminating methane emissions while capturing the emissions' energy value.

This primer is designed to help realize the potential of landfill gas recovery in the state of Wisconsin. It provides information for developers of LFGTE projects, as well as all other participants in such projects: landfill operators, utility companies, independent power producers, utility regulators, state regulators, engineers, and equipment vendors.

What Information Does This Primer Contain?

If you are interested in taking advantage of the economic and environmental opportunities in LFGTE recovery in Wisconsin, you will need to know the regulatory requirements that apply. You will also need to know what economic incentives are available to help make these projects more economically viable.

To address these needs, this primer covers the following topics:

- Federal Standards and Permits. This section provides information on federal regulations that may pertain to LFGTE projects, including solid waste, air quality, and water quality regulations.
- State Standards and Permits. This section provides information on state permits that apply to landfill gas recovery projects in the State of Wisconsin.
- Local Standards and Permits. Local permit approval will often be needed for LFGTE projects. This section offers a step-by-step process you can follow to secure this approval.
- Federal Incentive Programs. This section presents information on federal incentives that may apply to LFGTE projects.
- State Funding Programs. This section presents information on the environmental infrastructure financing opportunities that are available in the State of Wisconsin.

4 Where Can I Go For More Information?

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Landfill Methane Outreach Program
U.S. EPA, 6202J
401 M Street, SW
Washington, DC 20460
Phone: (888) 782-7937
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Part 1: Standards and Permits

1 Overview of Federal Standards and Permits

The following section discusses federal regulations that may pertain to LFGTE projects. The LFGTE projects can be subject to solid waste, air quality, and water quality regulations. The federal regulations are presented in general terms, because individual state/local governments generally develop their own regulations for carrying out federal mandates. Specific requirements may therefore differ among states. Project developers will have to contact relevant federal agencies and, in some cases, state agencies for more detailed information and applications. The discussion of each key federal standard/permit contains three components:

- Importance of the standard/permit to LFGTE project developers
- Applicability to LFGTE projects
- Description of each standard/permit

1.1 Resource Conservation and Recovery Act Subtitle D

Importance Before a LFGTE project can be developed, all Resource Conservation and Recovery Act (RCRA) Subtitle D requirements (i.e., requirements for non-hazardous waste management) must be satisfied.

Applicability Methane is explosive in certain concentrations and poses a hazard if it migrates beyond the landfill facility boundary. Landfill gas collection systems must meet RCRA Subtitle D standards for gas control.

Description Since October 1979, federal regulations promulgated under Subtitle D of RCRA required controls on migration of landfill gas. In 1991, EPA updated landfill design and performance standards. The newer standards apply to municipal solid waste landfills that were active on or after October 9, 1993. Specifically, the standards require monitoring of landfill gas and establishing performance standards for combustible gas migration control. Monitoring requirements must be met at landfills not only during their operation, but also for a period of 30 years after closure.

Landfills affected by RCRA Subtitle D are required to control gas by establishing a program to periodically check for methane emissions and prevent offsite migration. Landfill owners and operators must ensure that the concentration of methane gas does not exceed:

- 25 percent of the lower explosive limit for methane in facilities' structures
- The lower explosive limit for methane at the facility boundary

Permitted limits on methane levels reflect the fact that methane is explosive within the range of 5 to 15 percent concentration in air. If methane emissions exceed permitted limits, corrective action (i.e., installation of a landfill gas collection system) must be taken. Subtitle D may provide an impetus for some landfills to install energy recovery projects in cases where a gas collection system is required for compliance (see 40 CFR Part 258 for more information).

1.2 Clean Air Act (CAA)

The CAA regulates emissions of pollutants to ensure that air quality meets specified health and welfare standards. The CAA contains two provisions that may affect LFGTE projects: New Source Performance Standards (NSPS) and New Source Review (NSR). Facilities that are planning to construct a new LFGTE system or that plan to modify a landfill operation to incorporate a LFGTE system must obtain a Permit to Construct and Operate from the responsible air regulatory agency if emissions from the project are expected to exceed the major facility emission thresholds. The Permit to Construct and Operate specifies the NSPS and NSR requirements that the project must meet. Once construction is complete, the facility must obtain an operating permit that meets the requirements defined in Title V of the 1990 CAA Amendments. The general requirements of NSPS, NSR, and Title V for LFGTE projects are discussed below.

Non-Methane Organic Compounds Emissions (NMOCs): New Source Performance Standards (NSPS)

Importance LFGTE projects can be part of a compliance strategy to meet EPA's new emissions standards for landfill gas.

Applicability Landfills meeting certain design capacity, age, and emissions criteria are required to collect landfill gas and either flare it or use it for energy.

Description EPA final regulations under Title I of the CAA Amendments require affected landfills to collect and control landfill gas. Specifically, the CAA targets reductions in the emissions of NMOCs found in landfill gas because they contribute to local smog formation. For landfills last modified on or before May 30, 1991, and that received waste after November 8, 1987 ("existing landfills"), the standards are "Emissions Guidelines" (EG), which has been incorporated as Georgia Rule (ggg)—"Municipal Solid Waste Landfills."

For landfills that began construction or accepted waste for the first time on or after May 30, 1991 ("new landfills"), the standards are "New Source Performance Standards" (NSPS). The final regulations can be found in the Federal Register, March 12, 1996, Vol. 61, No. 49, pgs. 9907-9944, or can be obtained from the National Technical Information Service (NTIS) at (703) 487-4650. Ask for PB96-153465.

The basic requirements to determine if controls for landfill gas are necessary are the same for both existing and new landfills. Landfills that exceed both of the following criteria must comply with collection system requirements.

- Capacity—Maximum design capacity greater than or equal to 2.5 million Mg[1] (or 2.75 million tons) or 3.27 million yd^3
- Emissions—Annual NMOC emission rate is greater than 50 metric tons.

Air Emissions: New Source Review (NSR) Permitting Process

Importance New LFGTE projects may be required to obtain pre-construction permits under New Source Review (NSR). Depending on the area in which the project is located, obtaining these permits may be the most critical aspect of project approval.

Applicability The combustion of landfill gas results in emissions of carbon monoxide and oxides of nitrogen. Requirements vary for control of these emissions depending on local air quality. The relevant standards for a particular area will be discussed in Section 2,

[1]Landfills with less than 2.5 million Mg are required to file a design capacity report.

State Standards and Permits. Applicability of these standards to LFGTE projects will depend on the level of emissions resulting from the technology used in the project and the project's location (i.e., attainment or non-attainment area).

Description CAA regulations require new stationary sources and modifications to existing sources of certain air emissions to undergo NSR before they can operate. The purpose of these regulations is to ensure that sources meet the applicable air quality standards for the area in which they are located. Because these regulations are complex, a landfill owner or operator may want to consult an attorney or expert familiar with NSR for more information about permit requirements in a particular area. Air permitting requirements should also be discussed with the Air Protection Branch of Georgia's Environmental Protection Division.

The existing CAA regulations for attainment and maintenance of ambient air quality standards regulate six criteria pollutants—ozone, nitrogen dioxide (NO_2), carbon monoxide (CO), particulate matter (PM-10) and (PM 2.5) sulfur dioxide (SO_2), and lead. The CAA authorizes the EPA to set both health- and public welfare-based national ambient air quality standards (NAAQS) for each criteria pollutant. Areas that meet the NAAQS for a particular air pollutant are classified as being in "attainment" for that pollutant and those that do not are in "non-attainment." Because each state is required to develop an air quality implementation plan (called a State Implementation Plan or SIP) to attain and maintain compliance with the NAAQS in each Air Quality Control Region within the state, specific permit requirements will vary by state. (See 40 CFR 51.160-51.166 for more information.)

The location of the LFGTE project will dictate which kinds of construction and operating permits are required. If the landfill is located in an area that is in attainment for a particular pollutant, the LFGTE project must undergo Prevention of Significant Deterioration permitting if emission levels exceed major source thresholds. Nonattainment area permitting is required for those landfills that are located in areas that do not meet the NAAQS for a particular air pollutant. Furthermore, the level of emissions from the project determines whether the project must undergo major NSR or minor NSR. The requirements of major NSR permitting are greater than those for minor NSR. The following section provides more detail on new source permits.

Prevention of Significant Deterioration Permitting

Prevention of Significant Deterioration (PSD) review is used in attainment areas to determine whether a new or modified emissions source will cause significant deterioration of local air quality. Georgia's Air Protection Branch can assist landfill gas project developers in determining whether a proposed LFGTE project requires PSD approval.

All areas are governed to some extent by PSD regulations because no location is in attainment for all criteria pollutants. Applicants must determine PSD applicability for each individual pollutant. For gas-fired sources, PSD major NSR is required if the new source will emit or has the potential to emit any criteria pollutant at a level greater than 250 tons per year.

For each pollutant for which the source is considered major, the PSD major NSR permitting process requires that the applicants determine the maximum degree of reduction achievable through the application of available control technologies. Specifically, major sources may have to undergo any or all of the following four PSD steps:

- Best Available Control Technology (BACT) analysis
- Monitoring of local air quality

[2]Class I areas are specified under the Clean Air Act and include national parks. Projects situated within a certain distance from Class I areas are subject to more stringent criteria for emissions levels.

- Source impact analysis/modeling
- Additional impact analysis/modeling (i.e., impact on vegetation, visibility, and Class I areas)[2]

Minor sources and minor modifications (i.e., below 250 tons per year) are exempt from this process, but these sources may still be required to obtain construction and operating air permits (see CFR. 40 CFR 52.21 for more information on PSD).

Nonattainment Air Permitting

An area that does not meet the NAAQS for one or more of the six criteria pollutants is classified as being in "nonattainment" for that pollutant. Ozone is the most pervasive nonattainment pollutant, and the one most likely to affect LFGTE projects. A proposed new emissions source or modification of an existing source located in a nonattainment area must undergo nonattainment major NSR if the new source or the modification is classified as major (i.e., if the new or modified source exceeds specified emissions thresholds). To obtain a nonattainment NSR permit for criteria pollutants, the project:

- Must use technology that achieves the Lowest Achievable Emissions Rate (LAER) for the nonattainment pollutant
- Must arrange for an emissions reduction at an existing source that offsets the emissions from the new project at specific ratios

Potential Exemptions

EPA recently furnished a guidance document to state and regional permitting authorities that provides an exemption from major NSR permitting requirements for landfill projects that qualify as "pollution control projects." An existing landfill that plans to install a LFGTE recovery project may qualify as a pollution control project as long as it reduces non-methane organic compounds (NMOC) at the site. Under the guidance, the permitting authority may exempt the project from major NSR, provided it meets all other requirements under the CAA and the state, including minor source requirements. In nonattainment areas, offsets will still be required, but need not exceed a 1:1 ratio. States have discretion to exercise the increased flexibility allowed by the guidance on a case-by-case basis.

Title V Operating Permit

Importance Many LFGTE projects must obtain operating permits that satisfy Title V of the 1990 CAA Amendments.

Applicability Any LFGTE plant that is a major source, as defined by the Title V regulation (40 CFR Part 70), must obtain an operating permit.

Description Title V of the CAA requires that all major sources obtain new federally enforceable operating permits. Title V is modeled after a similar program established under the National Pollution Discharge Elimination System (NPDES). The purpose of Title V is to clarify, in a single document, all the air requirements applicable to a facility. Each major source subject to Title V must submit an application for an operating permit to Georgia's Air Protection Branch describing and quantifying all air pollution sources. The operating permit describes the emission limits and operating conditions that a facility must satisfy, and specifies the reporting requirements that a facility must meet to show compliance with the air pollution regulations. A Title V operating permit must be renewed every 5 years.

1.3 National Pollutant Discharge Elimination System (NPDES) Permit

Importance LFGTE projects may need to obtain National Pollutant Discharge Elimination System (NPDES) permits for discharging wastewater that is generated during the energy recovery process.

Applicability Landfill gas condensate forms when water and other vapors condense out of the gas stream due to temperature and pressure changes within the collection system. This wastewater must be removed from the collection system. In addition, LFGTE projects may generate wastewater from system maintenance and cooling tower blowdown.

Description NPDES permits regulate discharges of pollutants to surface waters. The authority to issue these permits is delegated to state governments by EPA. The permits, which typically last 5 years, limit the quantity and concentration of pollutants that may be discharged. To ensure compliance with the limits, permits require wastewater treatment or impose other operation conditions. The state water offices or EPA regional office can provide further information on these permits.

The permits are required for three categories of sources and can be issued as individual or general permits. A LFGTE project would be included in the "wastewater discharges to surface water from industrial facilities" category and would require an individual permit. An individual permit application for wastewater discharges typically requires information on water supply volumes; water utilization; wastewater flow; characteristics and disposal methods; planned improvements; storm water treatment; plant operation; materials and chemicals used; production; and other relevant information.

1.4 Clean Water Act, Section 401

Importance LFGTE projects may need Clean Water Act (CWA) Section 401 certification for constructing pipelines that cross streams or wetlands.

Applicability Landfill gas recovery collection pipes or distribution pipes from the landfill to a nearby gas user may cross streams or wetlands. When construction or operation of such pipes causes any discharge of dredge into streams or wetlands, the project may require Section 401 certification.

Description If the construction or operation of facilities results in any discharge into streams or wetlands, such construction is regulated under Section 401. This requirement may affect the construction of LFGTE project facilities or pipelines to transport landfill gas.

The applicant must obtain a water quality certification from the State in which the discharge will originate. The certification should then be sent to the U.S. Army Corps of Engineers. The certification indicates that such discharge will comply with the applicable provisions of Sections 301, 302, 303, 306, and 307 of the CWA.

1.5 Other Federal Permit Programs

The following are brief descriptions of how other federal permits could apply to LFGTE project development:

- RCRA Subtitle C could apply to a landfill gas project if it produces hazardous waste. While some landfill gas projects can return condensate to the landfill, many dispose of it through the public sewage system after some form of on-site treatment. In some cases, the condensate may contain high enough concentrations of heavy metals and organic chemicals for it to be classified as a hazardous waste, thus triggering federal regulation.
- The Historic Preservation Act of 1966 or the Endangered Species Act could apply if power lines or gas pipelines associated with a project infringe upon an historic site or an area that provides habitat for endangered species.

2. Overview of State Standards and Permits

This section provides information on permits required by the State of Wisconsin for the development of a LFGTE project.[3] Information provided on each permit includes: how the permit is applicable to LFGTE projects, the appropriate agency contact, a description of the permit, the statute/regulation, information required and suggestions for a successful application, the application and review process, and the review/approval period. For an overview of required permits, contact information, and length of the review period, see Tables 2.1 and 2.2. The criteria for landfill gas collection and LFGTE systems are provided in Table 2.3.

Summary of Permits

The principal permits required for LFGTE projects in Wisconsin are related to air quality and water quality and are regulated by the Wisconsin Department of Natural Resources (DNR).

Permitting Assistance

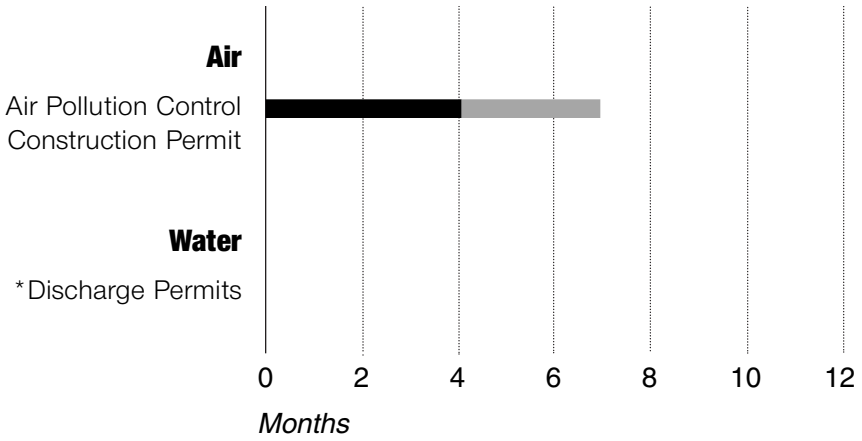
There is a central group within DNR that is responsible for helping applicants through the permitting process. This office, called the Division of Customer Assistance and External Relations, can be reached at (608) 267-9700.

[3]The permits contained in this handbook were suggested by state permitting agencies.

Table 2.1 Summary Table of State Standards/Permits

Standard	Permit	Agency/Contact	Review Period
Air	*Air Pollution Control Construction Permit*	Department of Natural Resources, Bureau of Air Management (central or regional offices) Central Office: Department of Natural Resources Bureau of Air Management 101 S. Webster Street P.O. Box 7921 Madison, WI 53707-7921 Phone: (608) 266-7718 Fax: (608) 267-0560	120 days for a minor source 210 days for a major source.
Water	*Wisconsin Pollutant Discharge Elimination System (WPDES) Permits*	Department of Natural Resources WPDES Permit Section Box 7921 Madison, WI 53707 Phone: (608) 266-1494	No statutory review period

Table 2.2 Permit Approval Time-line



Notes
Solid black line denotes the minimum review/approval period; gray line denotes the maximum review/approval period.

* There is no statutory review period for water permits, however an application must be submitted at least 180 days before the expected date of discharge.

Table 2.3 Summary of Landfill Gas Systems Criteria

Type of Project	Specific Criteria
Landfill Gas Collection and Energy System	All landfills which accept municipal solid waste shall be designed with an active gas recovery system in order to efficiently collect and combust hazardous air contaminants. All gas recovery systems shall include the following design features, unless otherwise approved by the Department of Natural Resources (DNR). 1. Vertical gas extraction wells throughout the entire landfill with a maximum radius of influence of 150 feet per well (lesser radii proposed for wells near the landfill perimeter). Alternative well spacings may be allowed if site specific data are obtained through the performance of pump tests. 2. All vertical gas extraction wells shall extend to 10 feet above the leachate collection system and shall be placed in 36-inch diameter boreholes. 3. The pipe in the borehole shall be a minimum of 6 inches in diameter, Schedule 80 polyvinylchloride or approved alternate. 4. The lower 2/3 to 3/4 of the pipe in the borehole shall be slotted or perforated. 5. The backfill around the slotted or perforated pipe in the borehole shall be 1-1½ inch washed stone. The top 10 feet of the borehole shall be sealed. 6. Each gas extraction well shall have a flow control valve and sampling access port. 7. The gas header system shall be looped to allow alternative flow paths for the gas. 8. The minimum slope on the header pipe shall be 2% for pipes over the waste mass. 9. Polyethylene pipe shall be used for header and lateral pipes. 10. The sizing of the blower, header, and laterals shall ensure that a minimum vacuum of 10 inches water column is available in the header adjacent to those wells located furthest from the blower. 11. A drip leg or equivalent shall be installed immediately before the blower to separate condensate from gas while preserving the suction at the wells while under maximum operating vacuum. 12. All condensate transfer piping and gas transfer piping located outside of the limits of waste shall be designed to be fully encased in at least 2 feet of clay, double-cased pipe or by using another approved secondary containment method except for systems with multiple drip legs within the landfill where the bulk of the condensate has been removed. 13. The system shall be designed to have the ability to collect and treat all condensate, measure volumes, and collect samples. 14. A flare shall be designed to meet the requirements of ch. NR 445. A new or existing landfill must submit a plan of operation. The plan must contain detailed information on the landfill gas collection system and the gas monitoring program.

The remainder of Section 2 contains information about each of the permits required by the DNR for landfill gas-to-Energy projects development. The information is organized in tables and each table contains the following information about the subject permit:

- Applicability to Landfill Gas Projects
- Agency Contact
- Description
- Statute/Regulation
- Information Required/Suggestions
- Application Process
- Review Process
- Review/Approval Period
- Fee

Table 2.4 Air Pollution Control Construction Permits (new/modified/reconstructed/replaced/relocated structures)

Applicability to Landfill Gas Projects

Emissions from equipment used at LFGTE recovery facilities, such as internal combustion engines, are subject to state air regulations. However, LFGTE projects may be exempt from the requirement to obtain an air pollution permit if emissions are below *de minimis* regulated levels.

Agency Contact

Department of Natural Resources (DNR), Bureau of Air Management central office or regional offices (see Appendix A):

Department of Natural Resources
Bureau of Air Management
101 S. Webster Street
P.O. Box 7921
Madison, WI 53707-7921
Phone: (608) 266-7718
Fax: (608) 267-0560

Description

Requires all new, modified, reconstructed, replaced, or relocated stationary air pollution sources to have an air pollution control construction permit from the DNR unless the source is exempt. This construction permit must be obtained by the facility prior to beginning construction, modification, reconstruction, relocation, or replacement of the source.

Statute/Regulation

Statutory Authority: Wisconsin Statutes (sections 144.30 to 144.426)

Administrative Code: Chapters NR 400 to NR 499

Information Required/Suggestions

Applicant must supply the following information: description of emission controls, attainment/nonattainment area status, description of project, all significant and insignificant existing or proposed air pollution units, description of operations, and activities at the facility.

Application Process	Submit application to the DNR's central office in Madison, WI, or to the appropriate regional office where the source is located, along with a $1,000 check, payable to DNR (all or a portion of the fee may be returned in the event that a permit is not required). A pre-application meeting can be held with DNR Air Program staff if the applicant has questions about the permit process.
Review Process	DNR has 30 days to determine whether the application is complete and can be approved (120 days for a major source), followed by a 30-day public comment period. If there is interest in a public hearing, it must be held within 60 days of the 30 day comment period, after which DNR has 60 days to issue/deny the permit.
Review/Approval Period	120 days for a minor source, 210 days for a major source.
Fees	Fee $1,000 must be submitted with the permit application. This application fee is an advance on the total review fee. The total fee for reviewing and issuing a construction permit varies from case to case and will be greater than $1,000.

Table 2.5 Wisconsin Pollutant Discharge Elimination System (WPDES) (Discharges to Surface Water or Ground Water)

Applicability to Landfill Gas Projects

Some LFGTE projects treat condensate, which forms as water and other vapors condense out of the gas steam due to temperature and pressure changes within the gas collection system. Also, energy recovery projects may generate wastewater from system maintenance and cooling tower blowdown. Such wastewater streams are typically combined with landfill leachate streams for treatment and discharge to surface waters or ground waters. In addition, any project that disturbs more than five acres needs a construction site erosion control permit.

Agency Contact

Department of Natural Resources
WPDES Permit Section
Box 7921
Madison, WI 53707
Phone: 608-266-1494

Construction Site Erosion Control Permit
Phone: 608-266-7078

Description

Permits are required for discharges from point sources to surface waters of the state and additionally to land areas where pollutants may percolate, seep to, or be leached to groundwaters. Discharge permits regulate:

- direct discharge of any pollutant to any surface water
- discharge of any pollutant, including cooling waters, to any surface water through any storm sewer not discharging to a publicly owned treatment works
- discharge of pollutants for the purpose of disposal, treatment, or containment on land areas including land disposal systems such as, but not limited to, pond, ridge and furrow, land spreading, spray irrigation, and absorption pond systems

Where the discharge of pollutants is by hauling, the applications must be filed by the persons responsible for the origin of the pollutants.

Discharges to publicly owned treatment works are exempt. The project developer, however, must notify the DNR and treatment works owner of the discharge, as well as the quality and quantity of the effluent to be introduced into the treatment works.

Statute/Regulation

Statutory Authority: Section 283.37, Stats.

Application Process	Applications can be obtained from the DNR, WPDES section, and filed with DNR. Applications must be filed at least 180 days before the expected date of discharge.
Review Process	The DNR, WPDES Permit Section, reviews applications.
Review/Approval Period	Varies, as there is no statutory review period for water permits in Wisconsin.
Fees	None

3. Overview of Local Standards and Permits

Within the framework of federal and state regulation, local governments will have some jurisdiction over LFGTE development in nearly all cases. Typically, local permits address issues that affect the surrounding community. These permits generally fall under the categories of construction, environment and health, land use, and water quality/use. Local governments are also responsible for administering some permits for federal and state regulations in addition to their own. For example, many local governments are responsible for ensuring compliance with federal air quality regulations. It should be noted, however, that some local standards and regulations are more strict than state or federal regulations.

Steps to Successful Local Permit Approval:

The following six steps will assist LFGTE project developers to achieve successful local permit approval:

Step 1 Determine which local authorities have jurisdiction over the project site.

Step 2 Contact local, city, and/or county planning and public works departments to obtain information about applicable permits and to discuss your plans. Meeting with agency staff to discuss the landfill gas project and required permits often helps expedite the permitting process.

Step 3 Obtain essential information regarding each permit, including:

- what information is required
- the permitting process that should be followed
- time frames (including submittal, hearing, and decision dates)

Step 4 Obtain copies of the regulations to compare and verify what is required in the permit applications. If they differ, contact the appropriate permitting agency.

Step 5 Submit a complete application. Incomplete applications typically result in processing delays.

Step 6 Attend meetings or hearings where the application will be discussed to respond to any questions that are raised. Failure to do so could result in delays.

Typical Local Permits

The table on the following page provides typical local permits and approvals required for LFGTE projects.

Table 3.1 Local Permits and Standards

Permit	Description
Building Permit	Most county/local governments require building permits for construction, which entail compliance with several types of building codes, such as plumbing and electrical. A typical building permit application may require detailed final plans for structures, including electrical and plumbing plans, floor layout, sewage facilities, a storm water drainage plan, size and shape of lot and buildings, setback of buildings from property lines and drain field, access, size and shape of foundation walls, air vents, window access, and heating or cooling plants (if included in the design).
Zoning/Land Use	Most communities have a zoning and land use plan that identifies where different types of development are allowed (i.e., residential, commercial, and industrial). The local zoning board determines whether a particular project meets local land use criteria and can grant variances if conditions warrant. A landfill gas project may require an industrial zoning classification.
Storm Water Management	Some local public works departments require a permit for discharges during construction and operation of a LFGTE project. Good facility design that maintains the pre-development runoff characteristics of the site will typically enable the project to meet permitting requirements easily.
Solid Waste Disposal	A LFGTE project may generate solid wastes, such as packaging material, cleaning solvents, and equipment fluids. If the landfill is closed, disposal of these solid wastes may be subject to review by a local authority.
Wastewater	The primary types of wastewater likely to be generated by a LFGTE project include maintenance wastewater and cooling tower blowdown. The city engineer's office should be contacted to provide information about available wastewater handling capacity and any unique condensate treatment requirements or permits for landfills.
Fire Hazards and Precautions	The mix of gases in landfill gas has a moderate to high explosion potential; methane is explosive in concentrations of 5 to 15 percent in air. Because methane has the potential to migrate from the landfill to on-site or off-site structures, it poses a significant public safety hazard. EPA requires that methane concentrations be less than 5 percent at a landfill property line, and less than 1.5 percent in a facility's structures. County regulations may call for even stricter standards to be observed at the landfill.
Noise	Most local zoning ordinances stipulate the maximum allowable decibel levels from noise sources. These levels vary depending on the location of the site. For example, LFGTE projects located near residential areas will likely have to comply with stricter noise level standards than projects located in non-populated areas.

Part 2: Incentive Programs

1. Overview of Federal Incentive Programs

There are three federal incentive programs that may apply to LFGTE projects: the Section 29 Tax Credit, the Renewable Energy Production Incentive (REPI), and the Qualifying Facilities (QF) Certification. Each program is described below.

1.1 Section 29 Tax Credit

Developers of LFGTE projects who sell landfill gas to an unrelated third party may qualify for a tax credit under Section 29 of the Internal Revenue Service (IRS) tax code. In order to take advantage of the credits, project developers may bring in an outside party when developing power projects. The Section 29 tax credit was established in 1979 to encourage development of unconventional gas resources, such as landfill gas. Section 29 tax credits are available through 2007 to landfill gas projects that have a gas sales agreement in place by December 31, 1996 and are placed in service by June 30, 1998. The credit has been extended several times by the U.S. Congress, but there is no guarantee that these extensions will continue. The credit is worth $6.10 per barrel of oil-equivalent (on a MMBtu basis) and is adjusted annually for inflation.

1.2 Renewable Energy Production Incentive (REPI)

The Renewable Energy Production Incentive (REPI), mandated under the Energy Policy Act of 1992, may provide a cash subsidy of up to $0.015 per kWh to publicly owned qualified renewable energy sources, such as landfills, that began operation between October 1993 and September 2003.[4] The Department of Energy (DOE) will make incentive payments for 10 fiscal years, beginning with the fiscal year in which application for payment for electricity generated by the facility is first made and the facility is determined by DOE to be eligible for receipt of an incentive payment. The period for payment under this program ends in fiscal year 2013.

For further information, contact:

U.S. Department of Energy
Efficiency and Renewable Energy
Forrestal Building, Mail Station EE-10
1000 Independence Avenue, S.W.
Washington, DC 20585
Phone: (202) 586-4564

U.S. Department of Energy
National Renewable Energy Laboratory
Golden Field Office
Golden, Colorado 80403
Phone: (303) 275-4706

1.3 Qualifying Facilities Certification

LFGTE that generate electricity will benefit from Qualifying Facilities (QF) certification, which is granted through the Federal Energy Regulatory Commission (FERC). The following describes the benefits of QF status and the steps for applying for such status.

[4]Final Rule Making, 10 Federal Register Part 451, July 19, 1995, Vol. 60, No. 138.

The Public Utility Regulatory Policies Act (PURPA)—one of five parts of the National Energy Act of 1978—was designed to promote conservation of energy and energy security by removing barriers to the development of cogeneration facilities and facilities that employ waste or renewable fuels. Such facilities are called Qualifying Facilities, or QFs. Under PURPA, utilities are required to purchase electricity from QFs at each utility's avoided cost of generating power. PURPA provides that a small power production facility, such as a LFGTE project that meets FERC standards, can become a QF.

In order to apply for QF status, applicants must prepare either (1) a Notice of Self-Certification, which asserts compliance with FERC's technical and ownership criteria, or (2) an Application for Commission Certification of Qualifying Status, which requires a draft Federal Register notice and which provides actual FERC approval of QF status. In either case, the applicant must also file Form 565, which is a list of questions about the project, and must pay any filing fees associated with certifications, exemptions, and other activities. FERC will provide the QF "Info Packet" that describes the necessary steps, requirements, and background information. After submittal of the initial application, further justifications and submittal of information may be required.

For the QF Info Packet and applications, contact:

Federal Energy Regulatory Commission
Qualifying Facilities Division
825 North Capitol Street, N.E.
Washington, DC 20426
Phone: (202) 208-0571

2. Overview of State Funding Programs

The Renewable Energy Assistance Program (REAP) is administered by the Wisconsin Energy Bureau and supports the cost-effective use of renewable energy in commercial and small industrial applications. Technical assistance cost sharing grants of $15,000 are available on a competitive basis for feasibility studies, design, engineering, and testing. Construction grants up to $75,000 are available on a first-come, first-serve basis each May. Projects must meet a 10-year payback requirement and applicants must be businesses with gross sales less than $100 million per year, municipalities, nonprofit organizations, or tribal governments. LFGTE projects are eligible. Contact:

Alex DePillis
Wisconsin Energy Bureau
Phone: (608) 266-1067
Fax: (608) 267-6931
E-mail: alex.depillis@doa.state.wi.us

"Energy for Tomorrow" is Wisconsin Electric Company's green pricing renewable energy program. The program solicits renewable energy projects to sell electricity to Wisconsin Electric customers at rates above the normal electric rates which subscribers voluntarily pay to encourage renewable energy projects. Contact:

Philip Theisen
Wisconsin Electric Power Company
Phone: (414) 221-2473
Fax: (414) 221-3853
Home Page: http://www.wisenergy.com

Appendix A: State Contacts

Department of Natural Resources

Central Office

Air Quality
Bureau of Air Management
P.O. Box 7921
Madison, WI 53707
Phone: (608) 266-7718
Fax: (608) 267-0560

Water Quality
Bureau of Watershed Management
P.O. Box 7921
Madison, WI 53707
Phone: (608) 267-7694
Fax: (608) 267-7664

Regional Offices

Northern Region
810 W. Maple Street
Spooner, WI 54801
Phone: (715) 635-2101
Fax: (715) 635-4105

or

P.O. Box 818
Rhinelander, WI 54501
Phone: (715) 365-8900
Fax: (715) 365-8932

West Central Region

P.O. Box 4001
Eau Claire, WI 54702-4001
Phone: (715) 839-3700
Fax: (715) 839-6076

Northeast Region

1125 N. Military Avenue
P.O. Box 10448
Green Bay, WI 54307
Phone: (414) 492-5800
Fax: (414) 492-5913

Southeast Region

2300 N. Dr. Martin Luther King, Jr. Drive
P.O. Box 12436
Milwaukee, WI 53212
Phone: (414) 263-8500
Fax: (414) 263-8716

South Central Region

3911 Fish Hatchery Road
Fitchburg, WI 53711
Phone: (608) 275-3266
Fax: (608) 275-3338

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